



The Blurb



*Newsletter of The Phil-Mont Mobile Radio Club
66 Years of Public Service, 1949 to 2015*

Volume 66 Number 1

www.phil-mont.org

January 2015

Live Long



And Prosper

“AUCTION-FEST”

THURSDAY, JANUARY 8, 2015 at 7PM

***In the WOLCOFF AUDITORIUM*
ROXBOROUGH MEMORIAL HOSPITAL
5800 RIDGE AVE. (Ridge Ave & Jamestown St.)
PHILADELPHIA PA 19128**

Correction: New Member Mike Davis is *KB1JEY*

The Blurb staff has been reprimanded!

<i>The Blurb</i> is published monthly by and for the members of The PHIL-MONT MOBILE RADIO CLUB, Inc., whose purpose is to promote Amateur Radio in general, and Mobile Radio in particular. Copying and quoting is permitted with a credit line. We gladly exchange publications with other amateur radio clubs. Requests should be sent to the Editor: <i>Rick DeVigiliis ND3B@ARRL.net</i> Subscriptions are available to non-members for \$12, addressed to the Treasurer. Labels and mailing: KB3IV Submissions deadline: All copy must be in the hands of the Editor by the 20th of the previous month.		Directors: N3QV(15) W3RM(15) K3HWG(15) WA3KIO(16) KB2ERL(16) ND3B(16)		Contact Phil-Mont: P.O. Box 404 Warminster, PA 18974 http://www.phil-mont.org Website: Eric N3QV & Andrew KC2PMW For club information: Contact any club officer, or the repeaters listed below. Address or club directory changes and articles for the membership e-mail list should be sent to: KB3IV			
		Sunday Morning Net Schedules • 2 Meter/ 70cm Net..... at 0930L on W3QV repeater • 10-on-10 Net at 1000L 28.393 MHz USB (±QRM) • 75 meter Net at 1020L 3.993 MHz LSB • ARES at 2100L on the W3QV repeater					
Committees Blurb folding: KB3IV & N3GLU Directory: KB3IV Field Day: KC2PMW		Internet: N3QV & KC2PMW Membership: Net Control: KB3IV		Program: W3AOK Publicity: W3RM Refreshments: W3AOK Repeater: W3AOK		Scholarship: W3RM Sunshine: N3GLU VE Program: NS3K Welcome: N3UBY Youth: KC2PMW	

All visitors are welcome!

The club meets at 7:30 PM on the *second* non-holiday Wednesday each month except July and August at Giant Supermarket, 315 York Rd, Willow Grove, PA
 Maps and directions are available at www.phil-mont.org.

License Examinations are held on the fourth **non-holiday Thursday** each month at **Community Ambulance Association, 1414 E. Butler Pike, Ambler PA 19002**
 Registration begins at 7:00 P.M. Applicants should contact Jim McCloskey NS3K at 215-275-2979 or jmccloskey@msn.com for the latest information.

Club Stations W3QV/R: The Jim Spencer Memorial Repeater System
 Ridge & Port Royal Avenues, Philadelphia, PA **Trustee: W3RM**
147.03 MHz + PL 91.5 Hz 444.80 MHz + PL 186.2 Hz
 Reach us on EchoLink through W3QV-R
W3AA Trustee: WU3I
W3EM: Field Day/special event station Trustee: N3QV

The Officers

President: WA3GM Greg Malone wa3gm@yahoo.com
Vice President: W3AOK Bill Popovic w3aok@verizon.net
Treas: KB3IV Ed Masarsky kb3iv@comcast.net
Secretary: WU3I Steve Hoch steven.hoch@verizon.net

The Prez Sez ...

Based on the results of the Club's annual election process, which took place during the December Annual Mid Month meeting, a smooth transition of Officers and Directors will take place on January First, 2015. Thus, I say congratulations to the Club's new Officers and Directors, success in all that you strive for in the name of this fine amateur radio club. My role as the Club's President will be relinquished, a role that was both challenging and rewarding, it has been my pleasure to serve ... stay well.

Respectfully, AL Tribble W3STW

***Phil-Mont Birthdays
& Tidbytes***

January Birthdays

03 Jon Verlin - K3VU
 05 Dorene Weiner (XYL WX3PHI)
 15 Karen Lenczynski (XYL KA3EIP)
 23 Susan Garretson - KB3YQM
 30 Bill Kane - N3OOL

MEMBERSHIP STATS

At press time P.M.R.C. had:

90 Full paid members
 8 Family members
 1 Honorary member
 1 Pending member

Wanted: Old Blurbs

Doug WA3DSP is scanning and archiving as many Blurbs as he can find. Please contact him if you have any: doug@crompton.com



***The VE test session is Thursday evening
the 22nd this month.***

As always, many thanks to our VE team!

From the Secretary

BOARD OF DIRECTORS MEETING,
WEDNESDAY 12/5/2014

Club President Al W3STW called the meeting to order AT 8:00 PM.

In attendance were Al W3STW, Greg WA3GM, Jim NS3K, Bob KB2ERL, Steve WU3I, Bill W3HWG, John KB3SJS and Fred WA3KIO. As there were enough board members present the meeting continued.

Other visitors to the meeting were: N3SHM, K3GBA, NC3U, KB3IV, K3ZMJ.

The President W3STW then called for some committee reports.

Treasurer Report: Jim NS3K reports that we currently have \$219.00 in the checking account. Dues will be coming in shortly.

Tech Committee: Ed KB3IV reports that the new Fusion install went well. There are a few problems with the controller. Bill is working on this to change some macros and other issues.

Net Control: KB3IV reports that the 2015 schedule is out to the net controls. The schedule and preamble will be published in the Blurb.

Sal NC3U suggested that we have a digital fusion net. More on this later. Currently the fusion mobile radio is in the hands of Dick W3WXC and Greg WA3GM has the fusion HT.

WU3I suggested we need a fusion sign out sheet to keep track of who has the club radios.

Sal NC3U suggested that we change the 2 meter net format to a Roll Call Net first then take other check ins.

Steve WU3I suggested that Sal come up with a preamble and format for this new net control format. Sal will work on this and report back.

Sam K3GBA suggested that we change the frequency of the 10 meter net to 29.250 due to DX

problems. Motion was made by Bill K3WHG to move the net. There was no second so the motions is not passed.

Doug WA3DSP would like to start a 10 meter AM net on Tuesday evenings at 9:00 PM. Motion made by Bob KB2ERL and second by Bill K3HWG to allow Doug to proceed with this net. The board unanimously approved this request.

From our last meeting the Phila ARES group is looking for a representative from each club for ARES to include training sessions. WU3I suggest that we invite Roger K4RFJ to come give an informal program at the general club meeting.

Steve WU3I states that the auction is Thursday January 8. ED KB3IV will be the auctioneer. Ed will also talk to Dick W3RM for publicity. Bill W3AOK will handle the door prizes. Only amateur equipment is to be auctioned.

The January board meeting will be January 14th at the usual meeting spot.

The president Al W3STW stated that the election of officer and board members will take place at the next general meeting. The ballots are printed and the absentee ballots have been distributed. Cross checking will be done to make sure no one votes twice.

Ed KB3IV states that the club e mail address is up and working: info@philmont.net

Greg WA3GM asked if the new PO Box has been secured. ED reports yes it has. PO Box 404 Warminster, PA 18974

As there was no further business to discuss at this meeting Steve WU3I made a motion to adjourn and this was seconded by Bill K3HWG. Meeting adjourned at 9:15 PM.

Respectfully submitted
Greg Malone WA3GM, Secretary

GENERAL MEETING, WEDNESDAY 12/10/14

The Meeting was called to order by the President AL W3STW at 726 PM in our new meeting facility at the Giant Super Store located in Willow Grove, PA.

The President called for a Roll Call of all members present.

The President then called for Committee Reports:

Repeater Committee: Bill W3AOK Bill reports that the NEW Upgraded Fusion Repeater is in and now will be interfaced to the controller. Thanks to Culley N3HTZ for the interface.

If you go in on Digital now on the 440 side you own the frequency for 30 seconds.

A new Sinclair Cavity was also put on the UHF Machine. The machine will be knocked down to 2 watts into the amp with about 65 out.

The Old Fusion repeater is now on 147.165 Full Time Digital.

Treasurer Report: Jim NS3K reports dues are due and some have already come in.

Editor Report: Rick ND3B says that the deadline for all submissions to the Blurb is the 20th of the month so please contribute pictures, articles etc. ...a lot of good articles to come.

Net Control: Ed KB3IV reports that the Sunday Morning Net control schedule is out and has been distributed to the net controls. If anyone would like to be a Net Control Operator please contact ED.

Doug, WA3DSP also reminded everyone that there will be a new new on 10 meters starting next Tuesday night at 9:00 PM on 29.493 AM. All are welcomed to join in and participate.

Judge of Elections: Al W3STW started the election process. The four Club Officers below are running unopposed. The motion was made by Jack NS3K and second by Bill K3HWG to have the secretary cast the vote to elect the unopposed

members. The Secretary Greg WA3GM then did cast the ballot to elect the below club officers.

President	Greg WA3GM
Vice Pres.	Bill W3AOK
Secretary	Steve WU3I
Treasurer	Ed KB3IV

Ballots were then distributed to those members present who were eligible to vote. The absentee ballots sent out in the email were also counted and read aloud by Sal NC3U. The below listed directors received the following votes:

Directors:	Rick ND3B	25
	Fred WA3KIO	26
	Bob KB2ERL	23
	Sam K3GBA	14
	Jim N3SHM	19
	Jack WA3BXH	20

As there were only 3 positions that needed to be filled ND3B, WA3KIO and KB2ERL were elected to the board of directors.

There is one more board position to be filled and the New President will do that after the 1st of the year.

Thanks to everyone who participated in the process and congratulations to the new board members.

Al W3STW then gave a most informative presentation on the GRID from the early days. Fine Business job Al.

The newly elected President of Phil-Mont Greg, WA3GM, thanked everyone for their confidence for electing him as their new president. He also thanked the Board of Directors for their fine job over the past year.

If you have any ideas for Phil-Mont please put them in writing and pass them along to myself or any board member so we may discuss the feasibility of your concerns or ideas at the next board meeting.

There being no further business the meeting was adjourned at 9:00 PM

Respectfully submitted,

Greg Malone, WA3GM, Secretary

From Barry, K3EUI

BPSK: The Digital Education Net (DEN)

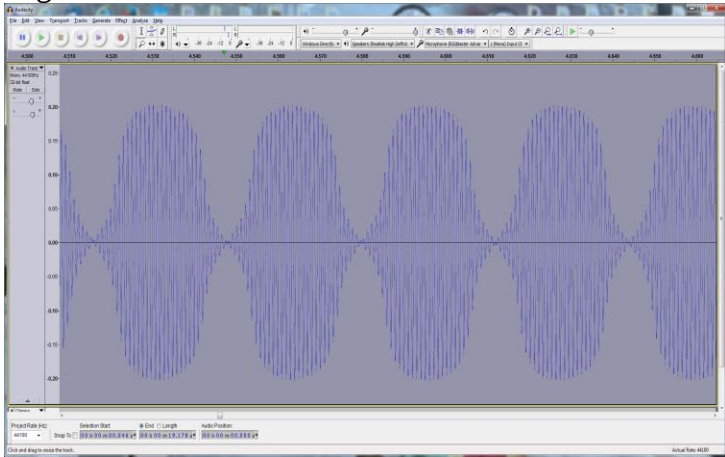
Quick Summary: CW is a wonderful mode when conditions get rough, occupying a bandwidth of around 100 Hz for well sent CW. Good CW operators can copy a CW signal when the S/N ratio is 0 dB (the signal is as strong as the noise). Most of the stations working CW copy “by ear” (without the aid of a computer) but many hams find copying CW by ear a skill very difficult to master, often getting stalled at around the 10 wpm speed. Modern sound card programs which feature CW might make it easier for hams to enjoy CW QSO’s by letting the software do some or even most of the translating of the dits and dahs to letters and numbers on the monitor. Sending perfectly spaced CW by keyboard (at any speed) is now a simple thing to do with the proper software and hardware. **RTTY** (radio teletype) works well most of the time, but its footprint (bandwidth) is about 300 Hz, a bit more than CW (100 Hz) yet far less than PHONE (2400 Hz). But QRN (atmospheric noise) QRM (interference from other stations) and especially QSB (rapid signal fading) can clobber a RTTY signal. Improvements in signal to noise ratio (S/N) can be made with very narrow (expensive) RTTY filters in the high-end radios and by using high-speed dedicated (expensive) TNC hardware like the HAL products, specialized for RTTY.

Do We Need a New Digital Mode? What if we set a goal to develop a digital keyboard “chat” mode that had high immunity to interference, had very narrow bandwidth, enabled typing speeds of over 30 wpm, and did not require a lot of power? Wouldn’t that be wonderful. Then, in the late 1990’s Peter Martinez (G3PLX) looked at the problems associated with RTTY on the HF bands and came up with a brand new digital mode. Rather than changing the frequency of the RF wave to represent 1’s and 0’s as is done by FSK or AFSK RTTY, his new method of modulation changes the **PHASE** of the radio wave to represent the 0’s and 1’s. In this newly created mode a **change of polarity** of the radio wave is a (0) and no change in polarity is a (1). When sent in this manner by a SSB radio with a computer equipped sound card the **binary phase-**

shifted keyed signal called **BPSK** has many advantages over RTTY. The mode BPSK31 (emission designator **G2B**) most common on the HF bands, operates at a speed of 31.25 baud, and takes up only 31 Hz bandwidth. By compressing the information (the modulation) to only 31 Hz creates a smaller footprint (less bandwidth) giving a far higher signal-to-noise ratio (S/N) for BPSK compared to RTTY as well as allowing more QSO’s per given band.

To enhance the speed of PSK, Martinez created a new translation code called **Varicode** that is structured more like Morse than RTTY. Remember RTTY uses 5 bits (combinations of 0 and 1) to represent all of the letters, numbers, and punctuation. In BPSK modulation, the common letters (like e, i, a) take up fewer bits of data (less time to send) than less frequently used letters like q, p, z. With BPSK31 you can have more QSO’s on the band, with less interference from your neighbors, since each QSO needs less than 100 Hz. The software for BPSK also employs a feature called “**automatic frequency control**” (**AFC**) in which signals in the waterfall are first centered by hand using a mouse, and then the AFC software keeps the signal tuned in properly if there is any frequency drift by the receiver or transmitter.

Here is what a **BPSK31** signal looks like recorded by the application **Audacity**, acting like an oscilloscope with my sound card and computer. The voltage of the signal (Y) is plotted against time (X). You can see the phase shifts are occurring in regular 31 Hz intervals, as this was the “idle” PSK31 signal which has continuous phase reversals at a rate of 31.25 per second (31 baud). The phase change occurs when the amplitude of the signal is zero. If the phase changes occurred at maximum voltage, tremendous harmonics would be generated resulting in a very wide signal.

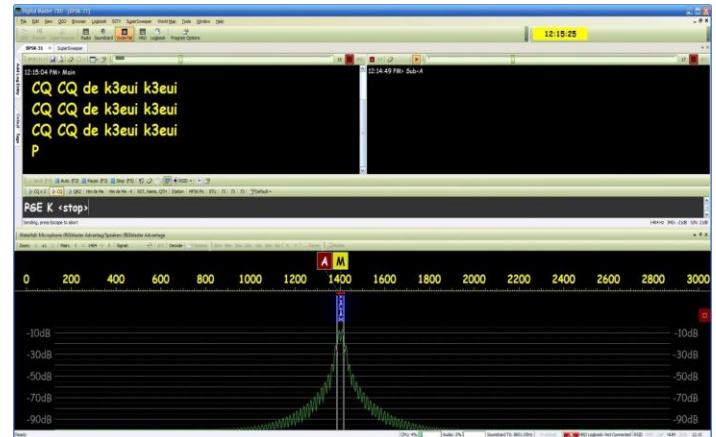


When heard in a speaker with an SSB radio, PSK31 sounds sort of like a “warbling” sound, somewhat like a clarinet with a fast vibrato. PSK therefore has an amplitude shift as well as the phase shift. PSK signals are easy to distinguish by ear from the rapidly changing pitch (170 Hz shift) of a constant amplitude RTTY signal.

The software for BPSK is such that two change reversals in a row (two 0’s in the Varicode) represent the space between letters and numbers, acting like a “**start bit**”. Thus, in the Varicode, combinations of 1’s and 0’s represent letters, numbers, and punctuation, but no letter, number, or punctuation has two 0’s occurring in sequence. This also lessons gibberish characters appearing on the screen when listening to “noise” on the band. Because phase changes of PSK31 signals also vary the amplitude of the RF carrier (unlike RTTY which has constant amplitude) the audio from the sound card must not overdrive the HF amplifier microphone circuit into the ALC region, which would cause tremendous distortion of the PSK signal. PSK31 operators often run 1-20 watts average power with 100 watt capable SSB rigs. With a simple dipole antenna on 10 or 20 meters, one can work the world with just 5 watts (QRP) as many are discovering.

Here is a Ham Radio Deluxe DM780 screen shot of my station, K3EUI, calling CQ on the 20 meter band at 1400 Hz on the waterfall. Note the narrow width of the audio signal and the sidebands above (upper) and below (lower) the center frequency of 1400 Hz. One often judges the “quality” of a PSK31 signal by its parallel tracks on the waterfall screen, or sometimes by what it sounds like in your speaker. Two parallel tracks with no sidebands

(extra tracks) are the ideal signal. Some software also allows you to measure the “**IMD**” or the **inter-modulation distortion** when a signal is in idle mode. A very clean PSK31 signal will have an IMD well below -20 dB, meaning distortion products contain 100 times less power than the signal itself ($10^{-2} = 1/100$).



Using the **Superbrowser** or **Supersweeper** mode available in most applications, we can scan the entire audio passband (3 kHz) and see and translate all of the stations who are transmitting BPSK31. That might be quite an advantage when looking for one station among many, or when operating during a contest and you are looking for new stations.

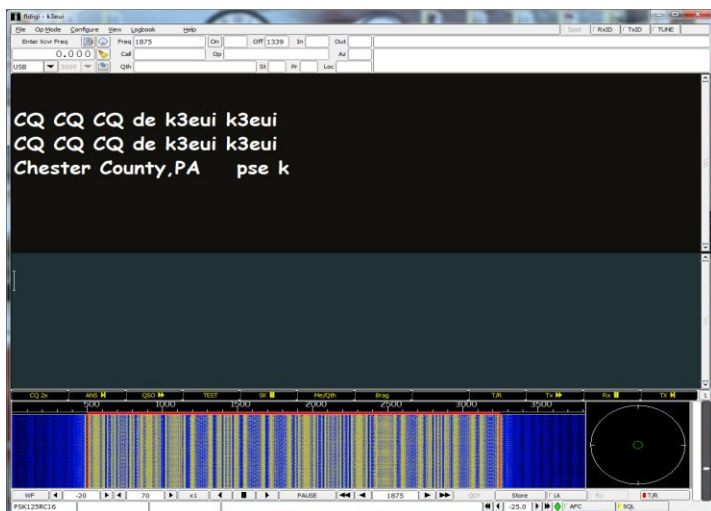
How FAST is the BPSK mode? BPSK is now available at a variety of speeds and bandwidths, and with a variety of sub-carriers, where each sub-carrier (separate audio tone) is independently modulated by a phase-shifted signal. We have been experimenting in Chester County ARES/RACES with **PSK125RC16** which operates at 125 baud and has 16 separate phase-shifted carriers, allowing transmission speeds of **1760 words/minute** with a bandwidth of 2750 Hz (as wide as a human voice). This is a wonderful mode to transfer large files (spreadsheets, photographs). Of course, this mode only legal on the vhf/uhf bands where wide bandwidth, high speed signals are permitted. On the HF bands, there is currently a 300 baud (FCC) speed limit, and most signals operate with bandwidths well below 500 Hz.

Here is a screen shot of a PSK125RC16 signal sent out on 2 meters FM using a very popular program (FLDIGI) for ARES/RACES NBEMS (Narrow Band Emergency Messaging Service). In this screen shot taken from FLDIGI you can see on the waterfall all 16 of the “sub-carriers” each of which contains PSK125 information. Here the signal appears from 500 Hz to 3250 Hz on the waterfall. Such a signal would not likely fit through the typical SSB filters in HF rigs, which often limit the higher audio frequencies to below 2800 Hz. This mode is very effective on 2 meter and 70 cm FM radios.

But in an emergency, or handling important traffic, you may want near-perfect copy the first time. If that is your goal, rather than an informal chat, then other modes, such as **Olivia**, having error detection and error correction are much more reliable than PSK31.

In the next issue of the Blurb, I will discuss the mode called Olivia and explain why Olivia is the mode of choice for NBEMS (emergency) coms on HF bands where accuracy is more important than speed.

Barry K3EUI



Problems? So far, everything sounds pretty good. PSK31 via audio in a computer equipped sound card is fairly inexpensive and works well at low power, and perhaps that is one reason PSK31 has replaced RTTY as the most common chat mode on HF. But one disadvantage of PSK31 (the most common BPSK signal on HF) is that there is no “error detection or error correction”. What does that mean? If the receiving station were to lose the signal for a few seconds, text is missed. Often that is of little consequence in a typical QSO, as in the next transmission you just ask the operator to repeat her/his QTH, or name, or rig.

***The following radio amateur has
Applied for membership in PMRC***

Tim Coughlin KC3DII
Technician class
ARRL Member
2375 Forrest Avenue
Bensalem, Pa 19020
Occupation Network and System Administrator
XYL Colleen

DIRECTORY UPDATE

Your 2015 Dues Invoice/Directory Information Sheet was sent to you in a separate mailing.

Please verify the information and return it with your dues & optional P.M.R.C.

SCHOLARSHIP FUND DONATION to: PMRC
PO Box 404 Warminster, Pa 18974. Your early reply will save the club additional expenses and will speed-up the publishing of the 2015 P.M.R.C. Directory.

January at Phil-Mont

1st Happy New Year
4th Sun WU3I NCS
8th Auction Fest - Wolcuff Auditorium
14th Board Meeting
11th Sun WA3GM NCS
18th Sun KB3IV NCS
19th Martin Luther King Day
25th NC3U NCS

*Don't forget the ARES net on Sunday nights and
the Digital net on Tuesday nights.*

And don't forget...

3rd Festival of Sleep Day
9th National Static Electricity Day
20th Cheese Day

For Sale

***1/8" (290#) & 3/16" (380#) Dark Olive
Drab Braided Cord · 100%
Polyester/Dacron Knit Braided. Nice stuff!
Tough and long lasting · UV Resistant and
Low Stretch Proudly Made in the U.S.A.!
Contact Steve WU3I at wu3i@arrl.net or
215-605-6074***

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First Class Mail

The Phil-Mont Mobile Radio Club, Inc
1700 Street Rd. Apt. H3, Warrington PA, 18976

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